Aerospace Industries Association Product Support Group

Industry Issues and Concerns for DoD Logistics M&S Workshop

1 September 2009

General Issues & Concerns

- M&S applications should be employed through all Logistics and Sustainment phases as they can reduce risk and cost throughout the system acquisition life cycle
- Need to have tailorable (vs one-time) M&S resources
  - Be careful for one size fits all
- Lack of awareness and insufficient details available for M&S models and resources
- Difficulty assessing the true capabilities and limitations of existing M&S resources
- M&S components do not work (talk & integrate) well together in some cases
  - M&S needs to be joint and interoperable
- Data repositories are as key and important as the M&S architecture that uses them; accuracy and completeness supports optimum decisions

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General Issues & Concerns (cont'd)

- Little insight into how M&S resources have been used in the past including success and failures (Val/Ver) (Workshop Panel Discussions?)
- Need to strengthen the Government/Industry partnership network - programs can fail if there are not strong partnerships (i.e. CRADA) (Workshop Discussion Topic)
- Community needs to understand licensing, support and procurement of the M&S resource
  - Community needs to understand proprietary rights and concerns
- DoD needs to issue policy and/or guidance along with a guidebook to strongly encourage PMs to select from the "best of the best" and/or "best of breed" M&S products and processes relative to operational availability, reliability and ownership cost – this will directly assist the DoD to solve their logistics and sustainment issues
  - PMs should document this early in their acquisition plans – complementary and interoperable

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Availability Definition

- DoD RAM-C Manual of 1 June provides the following definitions, along with some examples, some clarification of when an item should be included in the calculations and guidance on how to compute during various phases of a program:
  - Materiel Availability (A_M) = $\frac{\text{\# of operational end items}}{\text{Total \# of end items acquired}}$
  - Operational Availability (A_O) = $\frac{\text{Uptime}}{\text{Uptime + downtime}}$
- DoD RAM-C Manual does NOT provide:
  - Reporting periodicity requirements (daily, weekly, monthly, etc.)
  - Specific guidance on measuring Uptime and Downtime
  - Details on depot items and off-line items when computing Ao
- There continues to exist the opportunity for well-meaning people to compute different values for these factors given the same circumstances
- Recommend a focused industry/government effort over the next 6 – 12 months to more fully develop the math, data elements and reporting periodicity associated with these terms.

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Reliability Data & Prediction Standard Improvement

- Issues / Concerns
  - Reliability is the number one most critical parameter to Mission Assurance
    - Operational Availability
    - O&S Costs
  - Reliability predictions / tools have improved over the years, but current predictions and data still inaccurate under certain circumstances, e.g. Harsh Environments
- Recommended Solutions
  - Continue to fund Reliability Prediction Standard Improvements
  - Incentivize Government and Industry to collect Reliability data on fielded product, and develop Government / Industry database(s)

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Cost Estimation

- Issues / Concerns
  - Improvements in cost estimation have been made over the past several years in improving TOC / LCC estimates
    - WBS Standards
  - Significant Effort is needed in Cost Estimating Relationship (CER) development / standardization (Workshop Discussion Topic)
    - No standard CERs currently exist!
      - Especially true for D&D and P&D!
  - Cost needs to be Embraced on an Equal footing with Performance!
- Recommended Solutions
  - Adopt the current best-of-breeds as a standard
  - Fund development of new standard CERs, and incorporation into a standard tool-set

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Back-up

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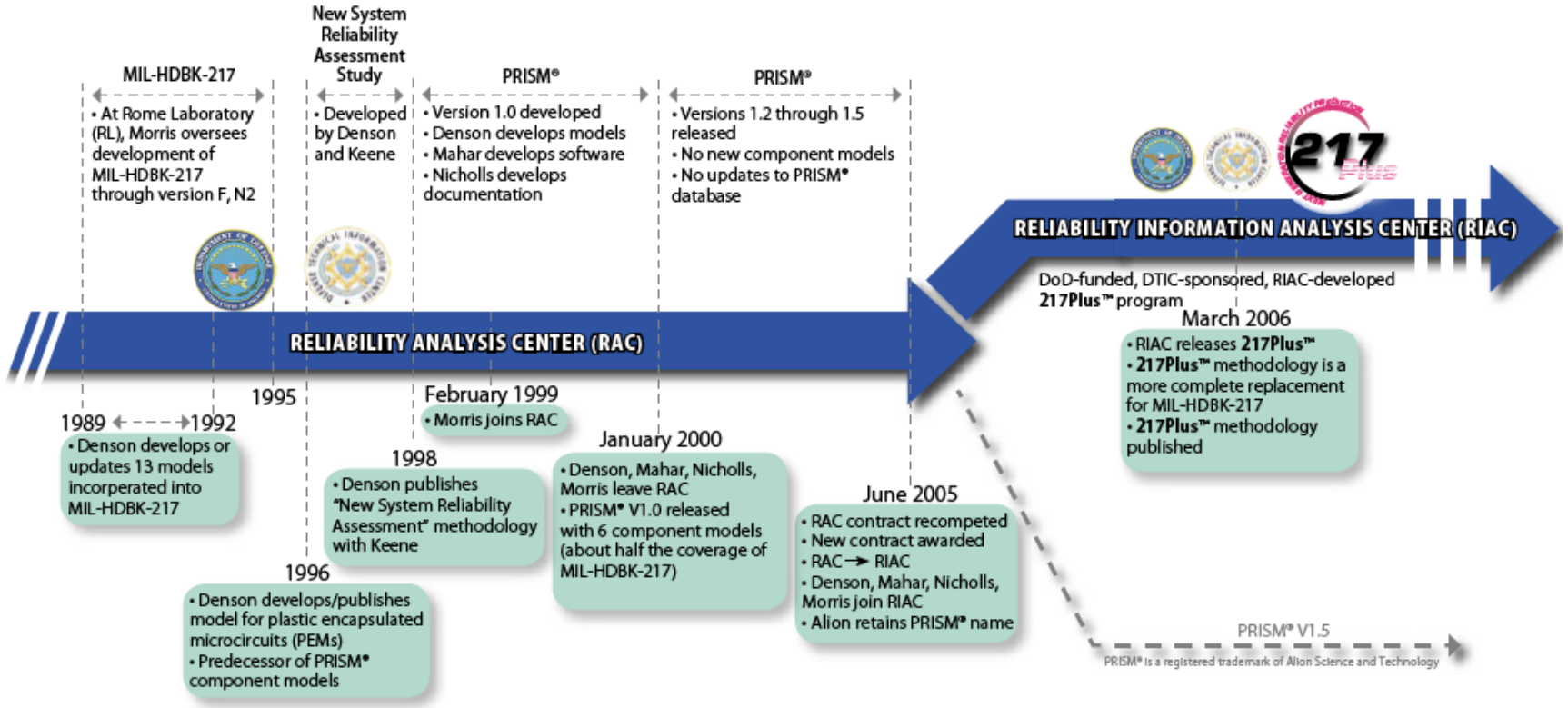
MIL-HDBK-217 Roadmap


MIL-HDBK-217
• At Rome Laboratory (RL), Morris oversees development of MIL-HDBK-217 through version F, N2
New System Reliability Assessment Study
• Developed by Denson and Keene
PRISM®
• Version 1.0 developed
• Denson develops models
• Mahar develops software
• Nicholls develops documentation
PRISM®
• Versions 1.2 through 1.5 released
• No new component models
• No updates to PRISM® database
RELIABILITY ANALYSIS CENTER (RAC)
RELIABILITY INFORMATION ANALYSIS CENTER (RIAC)
DoD-funded, DTIC-sponsored, RIAC-developed 217Plus™ program
1989 → 1992
• Denson develops or updates 13 models incorperated into MIL-HDBK-217
1995
1996
• Denson develops/publishes model for plastic encapsulated microcircuits (PEMs)
• Predecessor of PRISM® component models
1998
• Denson publishes "New System Reliability Assessment" methodology with Keene
February 1999
• Morris joins RAC
January 2000
• Denson, Mahar, Nicholls, Morris leave RAC
• PRISM® V1.0 released with 6 component models (about half the coverage of MIL-HDBK-217)
June 2005
• RAC contract recompeted
• New contract awarded
• RAC → RIAC
• Denson, Mahar, Nicholls, Morris join RIAC
• Alion retains PRISM® name
March 2006
• RIAC releases 217Plus™
• 217Plus™ methodology is a more complete replacement for MIL-HDBK-217
• 217Plus™ methodology published
PRISM® V1.5
PRISM® is a registered trademark of Alion Science and Technology

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